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*Journal of the Society of Arts.*

FRIDAY, JUNE 20, 1856.

## THE ANNUAL GENERAL MEETING.

The Annual General Meeting, for receiving the Council's Report, and for the Election of Officers for the ensuing year, will be held on Wednesday, the 25th inst., at 4 p.m. In accordance with the Bye-law, sec. 84, which provides that "the balloting list shall be published with the

*Journal of the Society*, on the Friday previous to the day of election, and a copy sent to every member of the Society," the balloting list duly prepared is issued with this number of the *Journal*. And in accordance with the Bye-law, sec. 42, which provides that "at this meeting the Council shall render to the Society a full account of all their proceedings and a statement of the funds of the Society, and of the receipts, payments, and expenditure, during the past year, and a copy of such statement shall be published in the *Journal of the Society* on the Friday before such General Meeting," the statement in question is now annexed.

## ANNUAL STATEMENT OF RECEIPTS, PAYMENTS, AND EXPENDITURE, FOR THE YEAR ENDING 31st MAY, 1856.

Dr.			Cr.		
To Subscriptions for the year ending May 31st, 1856:—			By General Establishment Expenses:—		
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
From Members and Institutions in Union with the Society .....	3285 3 6		Rent, Rates, and Taxes .....	220 17 0	
Outstanding .....	1255 16 0		House and Office .....	128 0 2	
		4540 19 6	Salaries, Wages, and Commissions .....	842 9 2	
Deduct due on former years ..	407 8 0		Postage Stamps and Parcels .....	119 0 9	
Estimated not recoverable ...	169 13 7		Stationery and Printing .....	121 4 9	
		577 1 7	Advertisements .....	1 14 0	
			Illustrations.....	0 3 6	
		3963 17 11			1433 9 4
To Life Contributions .....		210 0 0	By Special Objects:—		
		4173 17 11	Medals and Rewards.....	20 12 0	
To Dividends on Stock:—			Trade Museum .....	196 7 10	
£3166 13s. 4d. Consols .....	88 13 4		Museum of the Imports into the Port of London .....	10 10 0	
1969 10s. 6d. ditto, held in special trust ..	55 2 10		Working Classes Museum .....	64 10 1	
388 1s. 4d. New 3 per Cent. Annuities ..	10 18 2	154 14 4	Paris Visits, expenses incidental to .....	100 17 0	
					392 16 11
To Special Objects:—			By Journal.....	904 19 7	
Royal Commissioners of the Exhibition of 1851, on account of Trade Museum	100 0 0		Less charged to Union of Institutions .....	180 19 11	
T. Twining, Esq., in aid of the Working Classes Museum .....	130 0 0				723 19 8
Special Prizes at the Examination of Students.....	36 0 0		Exhibitions:—		
Chalon Exhibition—Sale of Catalogues, and Admissions .....	28 1 0		Patented Inventions, 1855-6 .....	77 10 10	
Exhibition of Inventions, ditto .....	5 11 6		Belgian Exhibition, 1856 .....	0 14 0	
Journal (Herr Kumpka, for Woodcuts) ...	3 3 0		Chalon Exhibition .....	127 13 9	
Microscopes, by cash .....	146 9 0				205 18 7
Ditto, in hand .....	121 13 3	268 2 3	Committees:—		
For Repairs of Photographs from the Guildford and Halstead Institutions ...	1 0 0	571 17 9	Union of Institutions, including Journal, Postage, Stationery, Printing, and other charges.....	634 13 11	
			Industrial Pathology Committee .....	5 14 0	
			Paris Improvements ditto .....	4 14 0	
					645 1 11
			Repairs and Alterations .....	29 10 9	
			One Year's Interest on £1000 .....	41 19 6	
			Law Charges and Stamp Duty .....	18 9 2	
			Library and Pictures .....	7 15 8	
			Microscopes .....	268 2 3	
			Dinner, 1855, Advertising, &c. ....	9 12 11	
					375 10 3
					3776 16 8
			By Excess of Income over Expenditure .....		1123 13 4
					4900 10 0
					4900 10 0

## BALANCE SHEET, 31st MAY, 1856.

Dr.			Cr.		
To sundry Creditors, viz.:—			By Cash in hand:—		
To Tradesmen's Bills.....	£536 12 5		At Messrs. Coutts and Co. ....	£124 6 0	
Salaries and Commissions.....	17 17 0		At Commercial Bank.....	75 15 7	
Debtenture at 4½ per cent.....	1000 0 0		In hands of Secretary.....	16 5 10	
Interest on ditto .....	11 5 0				216 7 5
Loan by G. T. Kemp, 1846 .....	50 0 0	1615 14 5	By Dividends due April 5, on £388 1s. 4d., New 3 p. Cts.		5 8 8
			By Consols, £3166 13s. 4d., at 94 .....		2975 2 0
To Trust Liability in respect of Government Stock (Consols) held for specific purposes, as per contra, viz.:—			By Royal Commissioners of Great Exhibition, on account of Expenditure on Trade Museum .....		529 5 9
Set apart to answer:—			By Subscriptions in arrear .....	1255 16 0	
Swiney Prize .....	1333 6 8		Estimated as not recoverable to the amount of.....	577 1 7	
Acton Trust .....	536 3 10				678 14 5
Stock Trust .....	100 0 0		By Government Stock held in trust, applicable to specific purposes, viz.:—		
Fothergill Trust .....	388 1 4		Consols .....	1969 10 6	
			New 3 per Cents. ....	388 1 4	
By Excess of Assets over Liabilities .....		2789 3 10			£4404 18 3
		£4404 18 3			

SAML. MORTON HUBERT, } *Auditors.*  
W. B. SIMPSON, }  
P. LE NEVE FOSTER, *Secretary.*

16th June, 1856.

### LIST OF LECTURERS, &c.

The Council have just issued to the Institutions in Union the Third General List of Lecturers, &c. A revised edition will be printed in the course of the next week.

### LIABILITY OF SHIPOWNERS.

(From *Times City Article*, June 13th, 1856.)

The Steamship Owners Association of London have had an interview with the Board of Trade on the liability to which, under Lord Campbell's Act, they are subjected with regard to damages in case of loss of life. This liability is indefinite, and may extend to the whole amount of the shipowner's property, since, although the law limits it to the value of the vessel and freight, and assesses £30 as the sum for each life destroyed, it gives power to the representatives of the sufferers, if dissatisfied with that amount, to bring an action, and to receive whatever a jury may be disposed to give. It is alleged that the most extravagant damages are often awarded, even in instances where the neglect or want of judgment that led to the catastrophe has been of the slightest kind, and that consequently the peril to individual shipowners is such as to operate prejudicially not only on all their calculations, but likewise on the competition, especially in the emigration trade, with foreign shipping, which is hampered by no such penalties. It is argued, moreover, that as the Government by their recent legislation have imposed restrictions on the shipowner, such as requiring him to submit his ships to half-yearly inspections, and to employ certificated commanders, it is unfair to make him subsequently responsible to a ruinous extent for contingencies against which these precautions have proved insufficient, and that, in fact, the same principle should be pursued as in the compulsory employment of licensed pilots, where the shipowner is exonerated from all consequences. The Association stated, however, that, looking at the prevalence of "popular prejudice," and the consequent position of Government on the question, a considerable number of their body would be glad to accept a compromise in the shape of such a modification of the statute as would define and limit the extent of their liability. Thus £30, or even double that sum, for each case of loss of life might be the Parliamentary amount fixed, giving passengers at the same time a right to stipulate for a larger indemnity before taking their passage, and making it lawful for the shipowner to insure himself against such extra liability. In reply to these observations, the President of the Board of Trade pointed out that the responsibilities complained of, even under Lord Campbell's Act, are only such as lie upon all other members of the community, and that these have actually been mitigated by the Merchant Shipping Act, which limits them to the value of ship and freight. He considered, moreover, that there had been no evidence of their having operated as a discouragement, and that the analogy suggested between certificated masters and licensed pilots is inaccurate, since the master is under the control of the shipowner, while the pilot is totally independent of him. The only plea which seemed to render a reconsideration of the law desirable is the position in which it places the British relatively with the foreign ship-owner, but the Association were informed that all the other points urged by them, as well as this, should receive the attention of the Board. In reviewing the arguments on both sides, the public will feel that the sole end to be aimed at is the establishment of sufficient penalties to render it certain, on the average, that the neglect of precautions will prove more expensive than their fulfilment. Everything in excess of this must have a self-defeating result, since it would be calculated to cause the passenger to omit an adequate insurance for his family, and to trust to litigation on the liability of

a shipowner, who in the end may prove insolvent, while it would also lead to a wide system of evasion, cases being said already to have occurred of the transfer of ships and their registration as foreign vessels, in order to relieve the owners of liability. Some pleas urged by the Association as to the leaning of juries against public companies in assessing damages, as well as with regard to accidents beyond the shipowner's control, are worthy of little attention, and the same may be said as to the remark on popular prejudice. The feeling of juries against public companies is fully explicable from the notorious acts of injustice frequently performed on the strength of their corporate position, of which their directors would individually be ashamed; while, as to the occurrence of accidents "beyond control," the illogical theory should have been considered too weak for reproduction. On the general bearing of popular prejudice respecting the liability of shipowners there can be no surprise, when the disregard of the most ordinary provisions for saving life—such, even, as the regular examination of the boats, and the adoption of the best means for lowering them, is illustrated in almost every fresh disaster that is recorded.

### LINEN TRADE WITH FRANCE.\*

By ROBERT STURROCK, SECRETARY TO DUNDEE CHAMBER OF COMMERCE.

The trade in linens and linen yarns between this country and France is comparatively of recent date, and the progress and decline of it is a striking illustration of the effects of moderate and prohibitory duties, proving how unfortunate it is when countries do not freely interchange their commodities.

It is proposed in the following remarks to give a short sketch of the variations in the duties for a number of years on linens and linen yarns imported into France, and to show the great advantages granted to Belgium since the serious alterations which took place in 1842. It is useless speculating as to the impetus which might have been given to the linen trade had the French lowered their duties at an earlier period than was done, but it will be seen how rapidly a very large intercourse sprung up between the two countries so soon as this was carried into effect. Considerable changes were frequently made in the French tariff during the various revolutions that took place in that country; and after the Restoration, France, in her legislation and practice, adopted in its broadest application the system of exclusion.

In the year 1826 the duties on linens were made very high, and this continued until 1836, when they were much lowered, and the classification so arranged as to admit the coarser description of goods at much reduced rates. The trade then gradually increased until 1842, at which time the same classification was continued; the duties, however, being not only raised to those of 1826, but made almost, if not altogether, prohibitory.

The effect of low duties was to be shown, however, in the export of linen yarns from this country. After a variety of changes, the duties were reduced in 1836 to rates equal to an *ad valorem* of from six to eight, ten, and twelve per cent. At that time the only classification existing was a difference in the duty on flax and tow yarns—a certain number of francs were charged on 100 kilogrammes, or 221 lbs. English; this, of course, admitted fine yarns at a very low rate. In 1840 a slight change took place, the duties on flax yarns being kept the same, but the first classification in the size was made in that of tows, which were divided into two classes—the duty on those below No. 9 remaining as before, but all above were charged at a like rate with flax; this, however, had little

\* These remarks were drawn up for, and appeared originally in, the *Dundee Advertiser*. They have been somewhat changed in form by Mr. Sturrock, to suit the pages of the *Journal*.

effect. The first serious alteration took place in 1841. Flax and tow yarns were then treated in a like manner, and divided into four classes—the duty being increased, and chargeable according to their coarseness or fineness. This change, as was intended, pressed most heavily on the finer descriptions. Next year, however, an agitation was got up by the French flax-spinners, and the government of Louis Philippe (in keeping, we know now, with all his selfishness) acceded to their urgent solicitation, and in 1842 duties almost prohibitory were imposed. The same classification was continued, but the duties were not only doubled, but in some cases increased even more. This, however, was not yet sufficient for protection to native industry—fine yarns were still imported, and in 1845, so as to cause their exclusion, the fourth class was subdivided—then making five—and the duty on very high numbers was increased about one-third.

Such is a short history of the duties which have been the cause of the “rise and fall” of the linen trade with France. That this country was deriving advantages, there can be no doubt, but so were the French nation in proportion. What did the French manufacturers say in 1840? In a petition to the French government, when a certain party was anxious for heavy duties being placed on British linen yarns, they stated that, “in order to meet foreign competition in linen, we ask but one favour—to leave us our raw material, yarns, as at present; we have lately beaten out English drills in the home market, and our own damask is rapidly replacing that which Belgium and Silesia sent us.” And now, under the altered policy, for the article of linen they pay at least one-fifth more than they would do under a moderate system of duties—at least two and a-half millions sterling annually, whilst the aggregate capital employed in the flax-spinning trade in France is not greater than the annual loss sustained by that nation in keeping up prohibitory duties.

To show at one view the different changes which have taken place, we append tables of the duties, so made up as to give examples in each class of yarns and linens at the different periods:—

#### DUTIES ON UNBLEACHED LINEN YARNS IMPORTED INTO FRANCE.

Year.	6lbs. or No. 8.		3lbs. or No. 16.		2lbs. or No. 24.		1lb. or No. 48.		½lb. or No. 96.	
	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.
1836	d. 4	d. 16½	d. 3½	d. 14½	d. 2½	d. 9½	d. 1½	d. 4½	d. 0½	d. 2½
1841	4½	19	3½	14½	3½	15½	3½	13½	1½	6½
1842	11	46	6½	28½	7½	31½	5½	24½	2½	12
1845	11	46	6½	28½	7½	31½	5½	24½	3½	15½

#### DUTIES ON BROWN LINENS IMPORTED INTO FRANCE.

*Duty on 291 lbs. English.*

Year.	*8	*12	*16	*20	above *20
	s. d.	s. d.	s. d.	s. d.	s. d.
1826	52 1	84 2	136 4	280 7	280 7
1836	28 10	60 2	120 3	180 4	280 7
1842	64 2	115 5	214 0	274 2	374 4

\* The number of threads of warp in 1-5th of an inch.

NOTE.—In order not to complicate the tables, the duties on Bleached Linens and Yarns are not given, but they were treated in a like manner.

A few figures, giving the value of the linens and yarns exported from this country at different periods, will prove how completely the trade followed the duties:—

	Linens.	Yarns.	Total.
In 1835.....	£61,612	£193,823	£260,435
1841.....	281,982	806,336	1,088,318
1843.....	137,965	482,367	620,322
1845.....	83,119	262,101	345,220
1854.....	65,237	48,427	113,664

A particular policy has thus annihilated a great branch

of industry, which one country was ready to provide, and another anxious to receive—its increase showing it must have been carried on for their mutual advantage.

A curious anomaly, however, existed till very lately. Whilst giving protection to the spinners in France, by imposing high duties on foreign yarns, there was, at the same time, an import duty on flax of from £2 to £3 per ton. This tax on the spinners has been removed, and may not it be a prelude to some relaxation for the manufacturers? Napoleon III. has also, by imperial decrees, been reducing import duties on wood, iron, coal, &c.; but we regret to see, within these few weeks, when a bill authorising these alterations, and a report of the committee upon it, were being discussed in the Chamber of Deputies, the feeling manifested by the vast majority of the members was so strong against free trade, that amongst other things M. de Baroche, President of the Council of State, said:—“What has been the policy of France since the peace? Firmly Protectionist, prudently progressive. We will not abandon it. We formally reject the principle of free trade, as incompatible with the independence and security of a great nation, as inapplicable to France, and as destructive of our noblest manufactures. No doubt our customs tariffs contain useless and antiquated prohibitions, and we think that they must be removed. But protection is necessary to our manufactures.” It is evident that there is a great want of information on the subject of free trade in France, and that they still seem to think it for their advantage to shut themselves out as much as possible from the rest of the world. But what do the words “protection is necessary to our manufactures” mean? Simply that the nation must pay a large tax for the production of commodities which might be got elsewhere at a cheaper rate. It is, therefore, probable, that the same result will eventually take place there as in England, viz., that the people will see it is for their interest to buy in the cheapest and sell in the dearest market, and that if those in power do not think proper to make the requisite changes in their commercial system, they will be called upon to do so by the great body of the consumers, who are paying for what is called “the independence and security of a great nation.”

The existence of different climates and circumstances shows it was intended that one part of the globe should minister to the wants of another; and whilst we, with our coal, iron, vast appliances of machinery, and insular position, are eminently a manufacturing country, so should France strive to bring out her agricultural resources in a much greater degree than she now does. It must, therefore, be a matter of gratification that the French Government has reduced the duties on farm machinery, and that the Emperor is doing everything in his power to introduce all the newest implements of husbandry, and to adopt the latest improvements in tillage. The coming Agricultural Exhibition in Paris, under his auspices, will surpass anything that has ever been of a like description; and from the practical manner in which these movements are being executed, the day cannot be far distant when the wealth of France will be much increased by improvements in agriculture of every description.

Napoleon III. has declared that his reign is to be one of peace. Since its commencement he has been engaged in war; but, like ourselves, it was in a good cause, and it has been brought to a satisfactory conclusion. This war, however, has increased the burdens of the French nation considerably, and now that there is peace, the great object of their ruler is to give them every chance of bearing these and other burdens as easily as possible. The continuance of his dynasty greatly depends upon increasing the comfort and wealth of his people; and knowing, as it appears he does, that free trade, which has worked so advantageously for Great Britain, will likewise bring prosperity to France, there may be good hopes of the commercial relations between the two countries being established on such a footing as to produce the happiest results

to both, and bind them together by ties stronger than any political treaty.

It is well said by an Edinburgh Reviewer, comparing the rural economy of France and Britain, that "the stability of the political institutions of the country (France) may be more powerfully affected by an insect in a blade of wheat than by all the magnificence which surrounds the throne; and, if a larger proportion of that intelligence and capital which are profusely expended in France upon the decorative and unproductive arts, could be turned to the elementary purpose of procuring food and clothing on the most advantageous terms for the service of man, Louis Napoleon might be surrounded by a less luxurious court, but he would rule over a more prosperous and contented people."

With regard to Belgium, after Louis Philippe had made the duties on the linens and yarns of the United Kingdom almost prohibitory in 1842, he permitted, by a special treaty, the same articles to be imported from Belgium at rather less than half the duties charged on our British manufactures, Belgium being made to place similar duties on these articles entering that country from the United Kingdom.

In order to exhibit the exact difference, we now append the following tables of the duties charged on unbleached yarns and brown linens imported into France from the United Kingdom and from Belgium. They have been carefully made up, and give examples of the different classes; that of the yarns being suited for the English and Irish, as well as for the Scotch mode of making up. It can be no matter of surprise that our exportation has fallen off, and a mere glance at these tables will be sufficient to show the good grounds our spinners and manufacturers have to complain of the partiality shown to Belgium.

#### DUTIES ON UNBLEACHED LINEN YARNS IMPORTED INTO FRANCE.

	6lbs. or No. 8.		3lbs. or No. 16.		2lbs. or No. 24.		1lb. or No. 48.		½lb. or No. 96.	
	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.	per Sp.	per Bd.
From Belgium.....	d. 4	d. 19	3 ½	d. 14 ½	3 ½	d. 15 ½	3 ½	d. 13 ½	2	s. 8 ½
From the United Kingdom.....	11	46	6 ½	28 ½	7 ½	31 ½	5 ½	24 ½	3 ½	15 ½

#### DUTIES ON BROWN LINENS IMPORTED INTO FRANCE.

*Duty on 22½ lbs. English.*

	*8		*12		*16		*20		above *20	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
From Belgium.....	24	6	51	1	102	2	153	4	238	6
From the United Kingdom.....	64	2	115	5	214	0	274	2	374	4

\* The number of threads of warp in 1-5th of an inch.

NOTE.—In order not to complicate the tables, the duties on Bleached Linen and Yarns are not given, but the difference is in a like proportion.

Belgium has for a long period supplied France with linens and yarns, but with a much smaller quantity of the latter. Previous to 1843—the year immediately following the imposition of the differential duties—there had not been exported to France much above 900,000 kilogrammes of yarn in any one year. To prove most conclusively how this country, under moderate duties, was able to supply France cheaper—competing successfully with Belgium—and how the people were quite prepared to become manufacturers themselves on getting a lower priced article, it is only necessary to give the importation of yarns into France at two different periods—the first under the existence of high, and the other under moderate duties:—

From Belgium.

From U. Kingdom.

	Kilo.		Kilo.
In 1830.....	831,000	.....	3,000
In 1839.....	499,000	.....	6,167,000

And in 1841—the year previous to almost prohibitory duties—the exportation of linen yarn from this country had reached ten millions of kilogrammes, which at two and a fifth lbs. gives 22,000,000 lbs. English. It is unnecessary to doubt how much France must have gained by this increase of trade, and still it has been put an end to on the ground of protecting native industry.

The following table exhibits the total quantity of linen yarn, and of unbleached linens—the bleached being a small proportion—imported into France during a series of years, giving at the same time the quantity from Belgium. It does not go farther back than 1842, for up to that year this country and Belgium were upon the same footing, and the trade from the United Kingdom, under moderate duties, had increased so gradually and so satisfactorily, that there could be no grounds for complaint. Whilst the table shows that, under differential duties, Belgium has now succeeded to almost the whole importation, it demonstrates very clearly, from the falling off in the importations, how much is now spun and manufactured in France, and how a trade can be forced into existence and increased by artificial means. The number of spindles employed in the linen trade in France in 1840 was only 57,000, whilst 1853 there were 395,800. This, however, has been brought about entirely by a nation submitting to be taxed for the support of a manufacture which can be procured cheaper elsewhere; and as dearness must curtail the consumption in France to a very considerable extent, we doubt not that, being the cheapest producers, were the duties on our goods only equalised to those of Belgium, a considerable trade would again arise, and the linen manufactures, in place of being carried on in Belgium, would be at once taken up by French manufacturers and carried on in France. Both countries would thus be greatly benefitted by the change in many ways:—

#### IMPORTED INTO FRANCE.

	LINEN YARN.		UNBLEACHED LINENS.	
	Total Importation.	From Belgium.	Total Importation.	From Belgium.
	Kilograms.	Kilo.	Kilo.	Kilo.
1842.....	11,569,812	578,453	3,942,376	2,361,353
1843.....	7,817,575	1,134,605	2,564,609	2,115,746
1844.....	8,127,888	1,806,258	2,697,202	2,364,937
1845.....	7,313,450	2,341,724	2,707,517	2,469,924
1846.....	5,070,875	1,809,374	2,763,074	2,252,707
1847.....	1,988,732	1,191,897	1,618,069	1,487,213
1848.....	424,685	255,688	768,186	731,052
1849.....	921,500	734,900	1,121,610	1,092,085
1850.....	1,101,000	830,200	1,456,811	1,366,914
1851.....	1,112,600	651,000	1,130,554	1,063,026
1852.....	1,112,086	730,734	1,135,933	1,028,027
1853.....	1,135,207	947,986	1,357,153	1,218,012
1854.....	708,564	567,847	845,524	777,690

1 Kilogramme = 2 1-5th lbs. English.

It is gratifying, however, in the meantime, that the free traders of Belgium have agreed to summon a Congress for September next, to be composed of representatives of all nations, to take into consideration how far existing fiscal laws and regulations interfere with the extension of commercial relations between the various countries of the world, and to devise the best means for extending the application of free-trade principles. This movement is in the right direction, and we hope it will be supported by the large mercantile towns in this country in such a manner as to forward their views. Should Belgium take a lead, and arrange her tariff—at present a restrictive one—upon a free and liberal principle, France, as her nearest neighbour, must follow for her own advantage and safety.

The following table shows the exportation of linens and linen yarns from the United Kingdom to France, from 1830 to 1854, and gives the proportion to the total quan-

tity of British and Irish produce and manufactures exported to the same country in the like period.

Year.	Linen Manufactures.		Linen Yarn.		Total Declared Value of Linens and Yarns.	Declared Value of all Exports of British and Irish Produce and Manufactures to France	Per cent of Linens and Yarns to all Exports of British & Irish Produce
	Yards.	Declar. Value.	lbs.	Declar. Value.			
		£		£	£	£	
1830	102,993	11,140	2,724	200	11,340	475,884	2.38
1831	102,642	8,265	17,503	1,095	9,360	602,688	1.55
1832	314,100	16,015	76,512	6,516	22,631	674,791	3.33
1833	183,698	13,055	867,288	68,299	81,354	848,333	9.68
1834	283,961	21,518	1,430,369	130,561	152,079	1,116,886	13.61
1835	1,247,901	61,612	2,384,678	198,823	260,435	1,453,636	17.91
1836	1,908,158	118,666	4,012,141	276,942	395,608	1,691,381	24.85
1837	3,668,388	142,812	7,010,983	401,007	543,819	1,643,204	33.09
1838	7,633,291	273,854	11,485,690	600,806	874,660	2,314,141	37.75
1839	6,255,476	246,829	12,269,264	644,144	890,973	2,298,307	37.76
1840	6,792,485	225,605	13,137,387	692,633	855,038	2,378,149	35.95
1841	8,823,509	281,982	20,832,875	806,336	1,088,318	2,902,002	37.60
1842	8,586,667	270,019	22,202,292	749,675	1,019,694	2,193,939	31.94
1843	4,379,601	137,965	13,824,286	482,357	620,322	2,534,896	24.47
1844	4,976,718	173,454	13,646,767	501,244	674,698	2,656,269	25.40
1845	2,366,082	102,440	9,163,168	414,360	616,790	2,791,238	18.61
1846	1,950,763	83,119	5,806,568	262,101	345,220	2,715,963	12.71
1847	1,326,265	71,939	1,662,173	116,990	188,929	2,554,183	7.39
1848	860,698	45,568	259,521	23,003	68,671	1,025,521	6.08
1849	1,618,246	81,543	542,334	50,213	131,766	1,951,269	6.75
1850	1,667,039	90,222	690,602	69,261	159,483	2,401,956	6.63
1851	1,363,097	76,489	863,777	64,888	141,377	2,028,463	6.96
1852	1,692,987	96,988	793,845	79,302	176,290	2,781,286	6.41
1853	1,774,832	110,069	487,811	66,680	176,749	2,636,330	6.70
1854	1,211,832	66,237	291,983	48,427	113,664	3,176,290	3.57

## Colonial Correspondence.

### THE NATURAL RESOURCES OF BRITISH HONDURAS.

Belize, British Honduras, May 15th, 1856.

SIR,—I regret to learn that the roes of the callipever did not reach you in good order. I am the more sorry for this, because this is not the season when that article can be procured. I shall, however, seize the earliest opportunity to furnish myself with a fresh supply, for I feel persuaded that it would prove a very valuable mercantile commodity; and I am by no means sure that it would not merely be a substitute for, but would be preferred to caviare. It should not be forgotten that the roe of the callipever is capable of being prepared in the same manner as that of the sterlet and the sturgeon in Russia and Prussia. The next sample which I send I will cover with a thick coating of gum arabic, and by that means, the air being excluded, I hope they will be thoroughly preserved. With respect to the fish itself, I am not surprised at the opinion expressed. It was, in fact, too much dried in the sun before it was packed up. The next which I forward I will place in a small keg, along with some brine. But the callipever, to be properly estimated, should be eaten when fresh, and "this consummation most devoutly to be wished" is not impossible. The fresh salmon is preserved in tins and sent out to the West Indies, and, although when it arrives there, it is very unlike what it is when it is newly caught in the Tay or the Tweed, it is yet very palatable to those whose "heart is not in the Highlands." There is nothing to prevent the callipever from being sent to England in a similar manner. I really think that Mr. Gamble (if there be such an individual, and the name is not a commercial fiction, like Price and Co.), or any other gentleman engaged in his line of business, would find his account in sending some person to this country who thoroughly understands the process of preserving meats, with all the necessary means and appliances. He ought to be accom-

panied by a good tinner. I will mention a few things which might be preserved in Honduras, and which, I have no doubt, would find a ready market in England. First and foremost, then, there is the turtle, that must not be overlooked. The turtle of Honduras attains to a very large size, and it is extremely delicate and fat. In consequence of the number of coral reefs which run along the whole coast of Honduras causing the water inside to be very shallow, the turtle feeding grounds, on which a species of moss or grass grows, are very extensive, stretching for several hundred miles. The supply of turtle might be almost unlimited. Any one engaged in the preserving and exportation of this wholesome and nutritious food, would do well to proceed somewhat after this manner. He would first contract with the turtlers for an ample supply of this testaceous fish, at so much a pound—say one penny. He ought to get it at that price, considering that the shell would be weighed in. Having thus caught—not his hare, as the worthy Mrs. Glass would say—but his turtle, he would separate from it the green fat, the neck, the fins, and the breast, which is called the callipee. These are the only parts which are worth preserving. The fleshy portion he would be able to sell in the market for steaks at twopence per lb. The greater part of the flesh when boiled down becomes gelatinous. Those square pieces of turtle which float about in the soup in company with diverse coloured balls, at city feasts, and which lord mayors and aldermen, not to say recorders and common sergeants, in the innocence and simplicity of their hearts, put into their mouths as green fat, swallow as green fat, and digest as green fat, are really and truly nothing more nor less than bits of turtle glue, which Birch and other great culinary criminals impose upon them as the real Simon Pure. Very likely they themselves are not better informed. But the true, genuine, unsophisticated fat is never found in a turtle after it has performed a sea voyage. "Lively," the animal may be—but fat—certainly not. It would be a mistake to attempt to manufacture and export the soup. The parts which I have above mentioned should simply be boiled down, and packed up in tins hermetically sealed. Another article which might be preserved and exported, and which would I have little doubt be highly prized by epicures in England, is the liver of the hiccatee. The hiccatee is the fresh-water turtle, or tortoise, and is, I believe, altogether unknown in Europe. It never approaches to anything like the size of the largest turtles. The weight of a hiccatee seldom exceeds 20 lbs. It has not got fins like a turtle, or, to be more correct, the sea tortoise, but round, webbed feet, each having five claws, like those of a duck. It is made for the land, therefore, as well as the water. It does not, however, make the former its home, and its feet are evidently intended merely to enable it, when one pool becomes dry, to travel in search of another. The hiccatee is generally caught in the dry season, when going "across the country" in pursuit of water. The feet when dressed are gelatinous, but the flesh is dry and fibrous. It is, however, the liver which renders this species of tortoise so highly estimable. It is a dark olive colour, and immensely large. If this were preserved in oil with truffles, it would be considered far superior to the goose's liver, of which the *pâté de foie gras* is made. The eggs of the iguana are another article deserving attention. One of these lizards sometimes contains as many as four-score eggs. It is about the size of a pigeon's egg, with a very soft shell, which contains only a very small quantity of the albumen. The yolk, unlike the yolks of other eggs, does not become hard and dry when boiled, but is soft and melting as marrow. It would be a refreshing sight to see Alderman A., or Sheriff B., or any other civic dignitary who has gone the round of all the dishes which native and foreign skill have been able to produce, and to whom a new combination would convey as much delight as a black tulip or a fresh dahlia would to a horticulturist, partaking, for the first time, of *pâté de foie gras de l'hiccatee*, or a dish of the eggs

of the iguana, garnished with anchovies. What I have mentioned, are only a few of the very excellent things which might be preserved and sent to England, in exchange for Highland mutton, Scotch collops, and fresh salmon. I state these facts, and I can do no more. If those who are interested in them will not take the hint, it is not my fault.

Some years ago, a Mr. Gunter set up a turtle establishment in Belize, but his scheme failed; why, I do not know. I suspect, however, that he attempted to manufacture a rich soup, which would only require to be warmed and sent to table. This certainly was a great error. I repeat that the fins, the neck, the breast, and the green fat should simply be boiled and hermetically sealed up. The soup should be made in England.

I am, &c.,

R. TEMPLE.

## Home Correspondence.

### THE JAMAICA SOCIETY OF ARTS.

SIR,—I have the satisfaction to enclose a resolution passed at a General Meeting of the Royal Society of Arts of Jamaica, expressing its thanks for the favourable consideration given by the Council of your Society to the application made by the Society in Jamaica for admission into Union, resulting in the general extension of the principle to Colonial Institutions.

You will please lay the resolution before the Council at its next meeting.

Since our Local Society was accepted in Union it has received the gracious patronage of her Majesty the Queen and H.R.H. Prince Albert, under which it has assumed its present style. While thus announcing the condescension of her Majesty and her Royal Consort, I should make mention of their munificence, as the royal patronage was accompanied by a donation of £150 in aid of a fund urgently required to enable the Society to carry into effect its various objects.

Emboldened by this generous grant, testifying at once to the sympathy of our Sovereign for a suffering colony, and the royal approbation of the work undertaken by the Society, and impelled by the pressing necessity of crippled means, the Council has forwarded to its agents a memorial, addressed to the patrons of arts and science in Great Britain, in which, while the proposed organisation is explained, the inability of the inhabitants to provide the requisite funds to meet the first outlay is submitted by way of appeal for aid.

If you can spare the space, perhaps you will so far assist me as to insert the enclosed statement of the proposed organisation in an early number of the *Journal*. I venture to make this suggestion, knowing the interest you have already evinced in the cause I seek to advance.

LEONARD ROWE VALPY.

The Addison-road, Kensington.

### STATEMENTS REFERRED TO IN THE FOREGOING LETTER.

The Royal Society of Arts of Jamaica took its origin under the government of Sir Charles E. Grey, such an institution having been suggested by her Majesty's Government, but a severe political crisis stayed its effectiveness until it was reorganised by Sir Henry Barkly, who, in the year 1854, issued a circular calling upon the members to reunite, and secure a representation of the natural resources and industrial products of the island in the Paris Exhibition. The collection which was forwarded secured the award of three first class medals, five second class medals, and in nine instances honourable mention was made of articles exhibited.

But the Society, being reorganised, aims at still higher purposes, and seeks to operate on a much broader basis. It seeks to encourage the development of the vast natural resources of the island, and to open up new channels of commercial wealth—hitherto neglected or unknown. It seeks to instruct the mind, improve the taste, and give an impetus to industry.

It is considered that the objects specified can to a great extent be effected by means of the following organisation. 1. Local Exhibitions; 2. A Museum, with Library and Lecture Room attached; 3. A Journal of Transactions; 4. Model Industrial and Reformatory Schools; 5. Horticultural and Experimental Garden; 6. Botanical Magazine.

Much time and careful management will doubtless be required before these plans can be fully adopted; but they have been accomplished in other countries, and there is no insuperable hindrance to the realisation of such high purposes in Jamaica.

1. LOCAL EXHIBITIONS.—The first local exhibition was held in February, 1855, and consisted of the collection afterwards sent to Paris. Such a display—at once interesting, elevating, and instructive—could not but speak to the spectators in the language of popular instruction; and if the satisfaction expressed by the visitors (exceeding 3,000 persons from all ranks of society) may be received as any evidence of the interest aroused, the Society was justified in declaring its conviction that a new era would from that date commence in the industrial pursuits of the inhabitants of the colony.

The second annual exhibition was opened in March, 1856, and the contributions were largely in excess of those procured in the previous year. This collection, however, was not all that the Society could have wished, or what it would have been had the necessary funds been at command to employ competent agents.

By annual exhibitions it is hoped that a spirit of emulation will be infused amongst producers of all classes; and by this means the Society will be enabled from time to time to test, and secure evidence of, the material condition and prospects of the people.

It is much to be desired that the principle of awarding premiums for practical advancement, arising from superior industry, intelligence, or skill, should be introduced, but at present the means are wanting.

2. MUSEUM.—The articles collected in the Exhibition of 1856 will form the nucleus of the Island Museum, which is designed chiefly to exhibit the riches of the animal, mineral, and vegetable kingdoms, as stored in a country so highly favoured in its natural gifts, and to trace the application of local industry.

Much progress has been made in the organisation of this Institution—including the library—and valuable contributions in the various departments have been received from local sources; but all action requiring any considerable outlay (such as the employment of a curator and librarian) is necessarily suspended in the existing pecuniary position of the Society.

3. TRANSACTIONS.—This publication has been issued monthly since December, 1854. Vol. I. contained 153 pages (post 4to.), and three numbers of Vol. II. have already been circulated. It contains minutes of the proceedings of the Society, and papers read at its meetings, whereby much valuable information, hitherto scattered, is brought into due order, and laid out for general instruction and application.

4. SCHOOLS.—By means of the schools a feeling of the true value of labour, and habits of frugality and mutual support in case of casualty or need, may be inculcated. In fact it is a spirit of true independence and self-reliance which is the great want of the peasantry.

5. GARDEN.—The establishment of the proposed garden may lead to the spread of a taste for horticulture, which it is hoped would reach the peasant proprietors, and attention might be drawn to cottage economy. It would also afford a nursery for medicinal plants, under the eyes

of the leading members of the medical profession; and the result of careful culture of the varied fruits of the island could be ascertained.

6. **BOTANICAL MAGAZINE.**—Through the pages of this publication the higher branches of botany, as applicable to Jamaica, would be brought within the reach of students. Many plants figured by such an authority as Dr. Woodville are found, on comparison with the natural foliage, to be incorrectly drawn, and such errors would thus find a medium of correction. Instructions for the cultivation of cottage gardens, as gathered by experience, could be published in a separate and cheap form.

The Society anticipates an additional sphere of usefulness by interchanging specimens in various branches of natural history with other Societies of a similar nature in various parts of the world, especially in Great Britain.

It is believed that the objects and efforts thus shadowed forth embrace a system thoroughly adapted to the urgent wants of the colony—including the well-being of the lately emancipated inhabitants—and that much of the future social and material prosperity of the country is (humanly speaking) dependent on the result. This view is confirmed by the gracious patronage which has been bestowed on the Society by her Majesty the Queen and H.R.H. Prince Albert.

The Society of Arts in England has extended the benefits of association and union to Colonial Institutions, and the Society in Jamaica has gladly availed itself of this advantage.

The members of the Society, being principally inhabitants of the colony, number about 300. The income is derived solely from the annual subscription (12s.), and entrance fee (8s.); this source hardly covers the casual current expenditure. All that has hitherto been effected towards advancing the objects specified, has been done gratuitously by a few willing co-operators, stimulated and aided by the influence and ever-active exertions of their president, Sir Henry Barkly.

In the depressed condition of the colony the legislature has not been able to do more than recognise the usefulness of the Institution by a small pecuniary grant of £150, and it is found necessary, in order to ensure extended operation, to seek extraneous aid.

It is thought that some of the societies and public bodies in the mother-country, and many of the patrons of art and science in Great Britain, as also many gentlemen who by commercial relations, or otherwise, are connected with the island, following the generous example of her Majesty and H.R.H. Prince Albert, may take an interest in the efforts of the Society, and strengthen its hands by pecuniary donations, and other useful contributions. To this end an appeal has been forwarded from Jamaica, which lies for perusal, with the rules and transactions of the Society, at the office of A. F. Ridgway, Esq., 42, Leicester-square.\*

#### TONNAGE REGISTRATION.

Woolwich Dockyard, 17th June, 1856.

Mr. Atherton requests the favour of the publication in the *Journal of the Society of Arts* of the enclosed letter, addressed to the editor of the *Mechanics' Magazine*, in reply to the editor's letter on tonnage registration published in the *Journal of the Society of Arts* on the 13th inst. :—

To the Editor of the *Mechanics' Magazine*.

Woolwich Dockyard, 17th June, 1856.

SIR,—It gives me satisfaction to find by your article on "Tonnage Registration," published in the *Mechanics' Magazine* of the 14th inst., No. 1,714, and in the *Journal of the Society of Arts* of the 13th inst., No. 186, that my letter of the 27th ult., in reply to your review of my

paper, "Tonnage Registration," read before the Society of Arts, on the 16th January last, has afforded you such a further exposition of my views on the deficiencies of our tonnage registration under the Merchant Shipping Act of 1854, as induces you to "congratulate Mr. Atherton upon the manifest improvement which has taken place in his opinions." Whether, however, this more approximate concurrence of our opinions may be attributable to any change in my views as to the deficiencies of our present tonnage registration system or to your own clearer perception of what my views really were and still are, I need not now question. The result is gratifying to me, for every writer on scientific subjects must desire to stand well with the editor and patrons of the *Mechanics' Magazine*; but I now further desire that our passive concurrence of opinion, embracing, as it does, the main principles of the case in question, may result in our active co-operation with a view to the amendment of our present shipping registration system; and, inasmuch as you have distinctly announced and adopted the propositions which substantiate the grounds of my exposition of the deficiencies of our present system, namely :—

1st. "That the tonnage measurement and registration of vessels has never been fairly brought before Government in any other than a purely fiscal point of view."

2nd. "That Government, in legislating on tonnage registration, has not contemplated the scientific features of the case, nor those which bear on the dangers of the sea voyage."

3rd. "That, undoubtedly, there is a point beyond which ships can not be safely loaded."

4th. "That, undoubtedly, it would be very desirable, if possible, to fix a limit to the degree in which ships may be loaded."

5th. That as respects the draught of water at which ships leave port, "Let the Board of Trade have, if it so please, properly authorised officers to note and record these facts."

Such being your acknowledgments in your review on my paper on "Tonnage Registration," read before the Society of Arts, on the 16th January last, I may surely presume it to be your opinion that the present state of our shipping registration system does not fulfil the statistical requirements of the times, and that the Act of 1854, as respects the matters above referred to, ought to be amended, "if possible."

Now, as regards the possibility of amending these declared and admitted deficiencies of the Act of 1854, it may depend considerably on the steadfastness of purpose which you, the Editor, and the numerous and influential patrons of the *Mechanics' Magazine*, and the members of the Society of Arts (to whom, also, you have appealed on this subject) may display in the prosecution of this good cause. It may, indeed, happen that neither the Editor of the *Mechanics' Magazine*, nor Mr. Atherton, nor any other loyal agitator in this good cause (for, in these days of popular education and advancement, the correction of deficiency or abuse in any department of national affairs, constitutes the very essence of loyalty), may not be so fortunate as to devise, all at once complete, that scheme of statistical registration which, on "consultative deliberation," may be decided upon as practically the best. For my part, I have not presumed that such would be the case; but, nevertheless, I have endeavoured to lead attention to the subject by pointing out the glaring deficiencies of the present law, and specifically bringing forward suggestions which, I believe, would constitute a practicable system, and which, embracing, as it would do, the capacity or roomage of ships for bulk of cargo, the capability of ships for carrying weight of cargo, the displacement at a certain specified draught, and the draught at which ships actually leave port, either above or below some assigned line, mark, or nail at stem and stern as of old, would, I conceive, constitute a scheme of shipping statistics more in accordance with the requirements of the times than is afforded by the present law. These suggestions,

\* Copies of these documents have been placed in the hands of the Secretary of the Society of Arts, John-street, Adelphi.

avowedly submitted in deference to further "consultative deliberation" scientifically competent to the task and biased by no class-prejudices on the question, are quite in accordance with my original paper; and if these views as to the purport of my paper have not been already noticed by the Editor of the *Mechanics' Magazine*, I hope they may now be regarded as a still further "improvement in Mr. Atherton's opinions," and become the subject of your still further congratulations and adoption, as a zealous co-agitator in the cause of shipping registration amendment. If I only obtain the active co-operation of the Editor of the *Mechanics' Magazine* to the extent of his own declarations, as above set forth, I will not quarrel with him, though he claim Captain "Coryphaeus" as a convert, instead of acknowledging himself to be a recruit.

Being thus in the amicable mood, I am not disposed, indeed it would be bad agitation, to disturb our harmony on principles by discussing matters of detail in practice; I may, however, remark on, not discuss, a few points. You question whether a ship of 1,000 tons register may or may not carry 3,000 tons *weight* of cargo. My statement was, that a ship of 1,000 tons register might be so proportioned as to carry 1,500 tons of cargo by *weight*, and, in addition thereto, 1,500 tons of cargo by *measurement*; making altogether, not 3,000 tons of *dead weight* cargo, but 3,000 tons of cargo chargeable for freight. The cellular principle of build now adopted in iron ships, would easily realise these limits, and the tonnage measurement of steamers is evidently open to still more anomalous results, as their register tonnage has no limited ratio whatever to their external displacement.

You appear to infer that I especially advocate external measurement: the first object of my original paper was to expose the fallacy of basing shipping registration on internal roomage only, as by the Act of 1854. I admit that, of the two, I would prefer a scheme of registration based on external displacement to a scheme based on internal roomage. I advocate neither exclusively; but I assert that shipping registration always must be a vexed question, so long as the legislature are imposed upon, as they always hitherto have been, with the idea that it is a question between *external* and *internal* measurement. Shipping registration never can be complete until some cognizance be taken of the measurements both internal and external; and by reference to the "Table of Details for Record" given in my original paper read before the Society of Arts on the 16th January, it will be seen that the scheme of measurement proposed by me is quite as complete for determining *internal* roomage, or capacity of the ship for bulk of cargo, as it is for determining the *external* displacement or capability of the ship for *weight* of cargo. Your notions as to my views in this respect appear to have been completely at fault; but I hope that, by this explanation, I have now established a concurrence of opinion between us as to the much vexed question of external and internal measurement.

I must also notice another point of importance, namely, the determination of the loading limit. At present, every ship receiving cargo has her load-limit, on which safety at sea so much depends, determined by interested parties. My argument is, that it ought to be determined by disinterested parties; and as you have now expressly *disclaimed* the impossibility of fixing a limit for each mercantile ship, I presume that you will *concede* the possibility of doing so. In my paper I left the mode of effecting this object an open question, to be settled by "consultative deliberation," suggesting, however, that the breadth of beam conjointly with the angle at which ships, according to their build, are liable to lie over, might be made the base of investigation. You have suggested that the ratio of length to breadth be also made an element in the calculation, in which I concur. Other ingenious suggestions may also present themselves, so it is to be hoped that "consultative deliberation" will overcome this stumbling-block, so lately an *impossibility*,

but now merely a *difficulty*, and, perhaps, by this day twelve-months, a simple question of proportion. As to the question of levying tolls fairly, on what principle are we to judge? Is it to be the gross size of the ship, or is it to be the capability of the ship for carrying cargo that is to be the measure of fairness? A steamer of 100 tons register tonnage may be ten times as big, cubically, as a sailing vessel of the same register tonnage. Is it fair to exact the same amount of fiscal tolls from each, as is done by the present law? As to the capability for carrying cargo, it is, I believe, statistically known that the tonnage freight by *weight* and the tonnage freight by *measure* are about equal; and seeing that the roomage of a ship for carrying bulk tonnage is no measure whatever of the capability of a ship for carrying weight tonnage, unless submerged deck awash, which you repudiate, it cannot be said on this principle that the levying of tolls is fairly based on internal roomage alone. Would not the capability for weight cargo be at least equally fair, and would not the medium between the cargo *roomage* tonnage and the cargo *weight* tonnage be, on the general average, fairer than either? or would not a direct toll on the goods be fairest of all? Here, again, is a case for "consultative deliberation."

As regards measurement by Sterling's rule, I am reluctant to say more on that subject, since you yourself have so elaborately expounded it and referred it to the judgment of the readers of the *Mechanics' Magazine*; and as respects Peake's system of admeasurement based on the curve of vertical sections, I dare say that Mr. Peake will himself publish it more fully than has hitherto been done; and, if I may be permitted to judge from your exposition thereof, I have no doubt it will be more highly appreciated by you, when better understood than it appears to be at present. The constructive elements to be measured for determining shipping registration must necessarily be specified and prescribed by law, but, for my own part, I see no reason why Sterling's rule should be imposed by Act of Parliament on shipping as the mode of working out a calculation any more than that it should be imposed on land surveying or other purposes for which it is applicable. There is no more mystery necessarily connected with the measurement of a ship than there is with the measurement of a tub. Why should it not be left to those who are responsible for calculations being correctly done to adopt Sterling's rule, or Peake's method, or any other of the various methods that may be in approved general use, and recognised as scientifically admissible for the purpose required? Is science likely to be promoted by legislative protection? Here, again, is a case for "consultative deliberation."

I trust that the editor of the *Mechanics' Magazine* will now recognise a still further "manifest improvement in Mr. Atherton's opinions," and take a decisive part either in upholding our shipping registration system as it now is, or declare himself an advocate for its amendment. The patrons of the *Mechanics' Magazine* may wish to know the decision of its Editor; and is not such a decision due to them and to this public cause?

I remain, Sir,

Your very obedient servant,  
CHAS. ATHERTON.

#### IMPROVEMENT OF POPULAR EDUCATIONAL INSTITUTIONS.

SIR,—This subject has made large advances since my letter to the Council regarding it. The Committee of Council's most wise minute offering assistance to institutions which appoint competent permanent teachers, is the most important educational step made since the celebrated minutes of 1846, which founded the pupil-teacher system; and if the institutions rightly apprehend their own high mission at this juncture, and the best mode of solving the problems which have perplexed them so long, I have no doubt that they will unitedly hail what I

have the honour to submit for their consideration at the coming Conference, and what the Committee of Council, I feel sure, would concede gladly.

All admit that apparatus, books, &c., are indispensable to the work of education, and that assistance towards procuring these is most important; but as the body without the spirit is dead, so these, without earnest, competent, settled teachers are dead also. Man is the potential agent to act upon man, and without this agency the masses will be untouched, albeit, a few may derive advantage from the educational machinery placed within their reach.

Those who value mental culture will contribute, as far as possible, towards the payment of the persons whom their institutions select as instructors, but everywhere we find a deep-seated fear lest their numbers and means prove unequal to the burden. If this be so, good feeling and the soundest maxims of political philosophy point it out as a case in which the Committee of Council should lend assistance by contributing, ungrudgingly, towards the salaries of competent settled teachers. This is done for the child up to his eleventh or twelfth year—why should it stop then, and prove, as it too often does, mere money thrown away?

It is done for these very institutions themselves in the matter of Art with an almost universal feeling of satisfaction. Why not extend the provision to *Literature and Science*? Art is important, but these other departments of education are certainly not less so, and it does appear that logical consistency requires the Committee of Council to make, and the institutions to avail themselves of, the provision which I have ventured to indicate. May we not hope that the coming Conference will accomplish this object?

Assuming the location in our educational institutions of competent certified instructors well provided with books and apparatus, it is reasonable that they should be made as useful as possible.

To this end the Committee of Council might fairly ask in return for its grant that the teachers of all elementary schools under inspection, situated within the district of the institute, be admitted free to the lectures delivered by the certified instructors.

It might also stipulate that one or two lectures per week be delivered by each certified teacher in the daytime, specially for children attending elementary schools under inspection, the children in such schools being admitted free, or at a small charge.

Thus elementary schools would become nurseries for the institutions, and a culture would be provided for the saplings which is now found wanting.

Of course this plan proposes that qualified inspectors should visit the institutions annually, and report upon the progress of the students, and I think it would not be difficult so to arrange the examinations that the names of the students might be placed according to merit, and transmitted to the governing body of the institute who would publish the list, and reward as they saw fit those who had attained distinction.—I am, &c.,

W. R. BOWDITCH.

St. Andrew's, Wakefield, June 11, 1856.

#### DECIMAL COINAGE.—MR. SMEE'S PROPOSAL.

SIR,—In the last number of the *Journal* your correspondent, Mr. Smeë, truly observes that, “unless some system be adopted by which our present coins shall bear a definite relation to decimal coins, decimals must remain a bugbear to the million, and their use be unpopular, if not almost impossible, in practice.” He cannot, however, have thoroughly considered the subject in proposing the introduction of three such minute coins as the *twenty-fifth*, the *fiftieth*, and the *hundredth* of a penny, for the purpose of overcoming the difficulty. If Mr. Smeë would but fairly examine my proposal of coining the *fifth* of a penny, he would perceive that no smaller coin would

be necessary, and even the 1-20th of a penny would be payable by merely interchanging the new coin with a farthing. I have shown, in previous numbers of the *Journal*, that this will accord with the adoption of either the *hundredth* of a pound or the *twelfth* of a pound, as a decimal unit.

I remain, Sir, your obedient servant,

S. A. GOOD.

H.M. Dockyard, Pembroke Dock, June 18, 1856.

#### REMARKS ON MR. HAWES' THEORY OF SAPONIFICATION.

In a paper read by Mr. Hawes, upon the 26th of March, and published in your *Journal* of the 28th of that month, some startling theories upon saponification were brought forward, the tendency of which aim at nothing more or less than the annihilation of the theory of Chevreul and his followers; the profoundness and correctness of which, I should have believed would have been deemed indisputable.

As some outline of the views advanced in the paper in question had been detailed to me by Mr. Lewis Thompson some years back, and being occupied at that time, as I have been pretty much since, in experiments upon saponification and saponaceous compounds; this, with the vital importance of the question to manufacturers, together with the scientific interest attached to the subject, was considered by me of such importance that I determined so fully to examine the question as at once to set at rest the correctness or fallacy of this view of the theory of saponification; and I shall now take the leading points of the new views as stated by Mr. Hawes, and give the results of my experiments connected with them, and also those of others where they bear upon the subject, and tend to elucidate what I feel to be the correct knowledge of the laws of saponification, which were first given to the world by Chevreul, and which no succeeding investigations have affected in any material manner.

Now, the first point I shall allude to, in which the results of my experiments place me completely at issue with Mr. Hawes, is the prevention of the production of glycerine by “combining the materials by mechanical means without the aid of fire, the object being to avoid the formation of glycerine.” I must remark that, in this method of saponification nothing is really gained; glycerine, in the atomic proportion, is liberated; in fact, a similar reaction results as that brought about in the usual processes employed. Further, Mr. Hawes remarks, “at present from 8 to 10 per cent. of the fatty matter is converted into glycerine.” This assertion I must compare with my own experiments upon this very important question, and I shall show that, in stating the above per centage, Mr. Hawes is also in error. Thus I found in four experiments that 100 parts of tallow, in its ordinary condition, when perfectly saponified by caustic soda in the usual manner, and the soap decomposed with great care by very dilute sulphuric acid, the fatty acids thus obtained, perfectly dried and weighed, gave, as a mean result, 94.5 per cent. One more experiment, more recently performed, with the greatest attention to accuracy, in which palm oil was employed, gave the following result:—14,000 grains of oil gave 13,212 grains fatty acids, which, calculated for 100 parts, gives—

Fatty acids.....	94.38
Glycerine liberated .....	5.62
	100.00

The ley contained in these cases, in addition to the glycerine, an inconsiderable amount of gelatinous matters, always the case when crude fatty matters are saponified, and which is of course included in the above 5.62, and therefore reduces the per cent. amount of glycerine still less. Again, Duffy (*Quarterly Journal of the Chemical Society*, vol. v., p. 305) found that the purest stearine furnished by saponification 95.59 of fat acid, a result which

I consider perfectly agrees with the above experiments, allowing for the crude state of my fatty matters; and from experiments I conclude that the amount of glycerine obtainable from the various fatty bodies in all cases, is very constant in per cent. amount. After all, these experiments are merely repetitions of those first made by Chevreul, which they fully confirm, and whose accuracy on these particular points cannot, I think, be called in question.

The next statement of Mr. Hawes, when he says that 1,540 lbs. of tallow are required to produce one ton of soap, is equally erroneous; and it is so for this reason:—The mean result of the analysis of ten specimens of soap made from tallow gave the per centage of fatty acids as 62·5, and the result of analysis of many hundred specimens enables me to fix this quantity as the constant amount of fatty acids existing in soap of that kind. Now, it is obvious that if 100 parts contain 62·5 of fat acids, one ton will contain 1,400 lbs.; but, as I have shown that 94·88 of fat acids represent really 100 of natural fat or tallow, it follows that 1,400 lbs. fatty acids is equivalent to 1,483 lbs. tallow, and that, consequently, this is the amount of tallow required to produce one ton of soap. If, again, the tallow really lost 10 per cent., as assumed by Mr. Hawes, then, by his own acknowledgment that soap contains 1,400 lbs. fat acid in one ton, his calculation that 1,540 lbs. would be required is also erroneous, as it is clear that the actual quantity must not be 1,540 lbs. but 1,555· lbs.

For  $90 : 10 :: 1400 : 155\cdot5$   $1400 \div 155 = 1555\cdot$

Where Mr. Hawes speaks of the 1,300 lbs. of tallow being represented in the 1,400 lbs. of fat acids, I confess I can scarcely follow his chain of argument; but the results of the experiments I am now going to adduce will, I trust, render any further consideration of that reasoning unnecessary.

These results may be embodied under two heads. I find, first—That the amount of soap produced from fatty materials by saponification, irrespective of time or treatment, is unvarying and constant, and that the constitution and quantity of the soap itself, from corresponding fatty materials, never varies. That is, 66·22 of tallow or neutral fatty matters produce 100 of soap, thus represented:

	Representing	in 100
Fat acids .....	62·50	94·88
Soda .....	6·50	5·62
Water .....	31·00	
	100·00	100·00

Secondly,—That after perfect saponification, and decomposition of the soap by stronger acids, on renewed saponification, no more glycerine is obtainable from these fatty acids, their weight remains constant throughout such treatment, after the first saponification.

I shall remark, finally, with regard to the surmise of Mr. Hawes, that if sodium amalgam were triturated with tallow, and water carefully added, no glycerine would be produced, the experiments of Duffy have shown that glycerine is eliminated under far more improbable circumstances, namely, by acting upon stearine with a solution made by adding alcohol to sodium. Then, again, the fact of a strong caustic ley being found difficult to combine with fatty acids, simply proves that the affinity of the alkali for the water is so great as to retard its reaction with neutral fats. Yet there is no difficulty in producing saponification under these circumstances, with proper well-understood precautions.

I look in vain for the importance ascribed by Mr. Hawes to these phenomena, and cannot perceive in the results any one point otherwise than reconcilable with the theory of Chevreul. And the experiments I have just now mentioned prove beyond any possibility of a doubt that saponification is not an irregular and variable oxidating effect, produced by the action of caustic soda on fatty matters, and which irregularity might be obviated altogether, as

contended by Mr. Hawes, but it is a definite chemical reaction, perfectly in agreement with the laws of chemical decomposition and combination, and in all cases uniform in its conditions.

Certain experiments I wished to make in connection with this subject have delayed my communication somewhat late.

I am, &c.!

ALFRED ANDERSON, F.C.S.

Soap Works, Southwark, May 30, 1856.

### BAROMETRIC ANEMOMETER.

SIR,—I believe the Society of Arts have offered a premium for an improved anemometer. I therefore beg respectfully to present the following scheme for their consideration and approval. The apparatus I propose to call a Barometric Anemometer. I think it promises very great accuracy in its indications, and at the same time is comparatively simple in its construction. It will be best described in two portions, viz., the external apparatus, or that which is exposed to the wind, and the internal, or indicating apparatus.

1st. On the top of any convenient building I would place a vane in the form of a funnel, mounted upon a hollow spindle, which should pass through an air-tight collar, or stuffing-box, into a small closed chamber, the spindle having a hole in the base opening into the chamber from which a pipe would lead to the indicating apparatus, which could be placed in any convenient part of the building. The vane should be balanced and arranged to turn freely horizontally, and present the mouth of the funnel towards the point whence the wind is blowing. The mouth of the funnel should be, at least, I think, a square foot in area.

2nd. The indicating apparatus I propose to use consists of two barometer tubes of about, say forty inches length, very carefully filled with mercury, and then inverted in two glass cisterns of mercury of very large area. One of these barometric tubes and cisterns I propose to enclose at the base with an air-tight glass chamber, into which chamber the pipe conducting the air from the vane should be inserted, and I anticipate that the varying force of the wind would be shown with great precision by the rising and falling of the column of mercury. The other barometric tube and cistern should be covered with a glass shade at the base to prevent any draught or current of air acting upon the mercurial column, but, at the same time, having an aperture to allow free communication with the external air. These two barometric tubes having been adjusted to agree with each other when under similar conditions (that is under the ordinary pressure of the atmosphere), the connection is to be made by the conducting pipe between the closed chamber at the bottom of the vane spindle and the closed glass chamber of the barometric tube. The pressure or force of the wind will then be shown by the difference of the heights of the columns of mercury in the tubes. I imagine it will give indications of the lightest wind. I propose dividing the tubes on the outside into inches and tenths of inches, to be read off by verniers sliding on the tubes. Forseeing some difficulty in adopting any adjusting apparatus for difference of level of the mercury in the cistern, I propose using cisterns of large area, that the difference or error may be as slight as possible. I think these would be best of a concave form, that would admit the inside being worked on a convex surface, or tool, to insure great uniformity of capacity. The barometric tubes should also be carefully selected with uniform bore. The best length for the tube must be determined by experiment. Thermometers should be placed in the cisterns of each barometric tube, to show any difference of temperature that may occur.

This apparatus could be made self-registering by adapting Mr. C. Brookes invention, now used for most meteorological instruments, and if thought desirable, a light

train of wheel works could be connected with the spindle of the vane, so as to show the direction in which the wind is blowing.

I think this apparatus might be very easily arranged for use on board of ships, the barometric tubes being placed in the cabin of the vessel, and the vane (which possibly could be reduced in size for this purpose) on the deck, or any convenient part of the rigging a flexible tube being used for connecting with the indicator. Where scientific accuracy is not desired, a vane fitted up in connection with a barometric tube and closed chamber could be arranged with a stopcock in the connecting tube between the vane and barometer, and another stopcock placed in the closed chamber by means of which the air would be allowed to act upon the mercury in the usual manner. By this plan an observation could be made of the height of the column of mercury when exposed to the pressure of the wind from the vane, and another when the pressure was shut off by the stopcock in the connecting tube, and the ordinary height shown by opening the stopcock in the chamber of the cistern. The difference of the heights would give the pressure or force of the wind.

These are the principal details of my invention, which I have endeavoured to place before our Society as clearly as I am able in the absence of drawings. Should I have failed in being sufficiently explicit, I shall be most happy to give any further information that may be desired.

Yours, &c.,

RICHARD WILLATS.

28, Ironmonger-lane, Cheapside, London, June 12, 1856.

## Proceedings of Institutions.

DOVER.—The twentieth annual meeting of the Museum and Philosophical Institution was held on the 7th ultimo, at the Guildhall Rooms. The report of the Committee, read by Mr. Phillips, (one of the secretaries), commenced by congratulating the members on the favourable condition of the Society, especially on its financial aspect, and on the success of the subscription set on foot at the last annual meeting for liquidating the debt of £60, £41 having been collected, which, with a saving in newspapers from the abolition of the stamp, &c., and by retrenchments during the last year, had enabled the committee to pay off nearly the whole of the debt. The attendance at the reading-room had been very large, from the interest excited by the late war. The library had received no augmentation by purchase. A splendidly bound volume, entitled "The Natural History of Braemar and Deeside," with illustrations, had been presented by H. R. H. Prince Albert. Some Government Reports, and a few valuable pamphlets from the Society of Arts, with the bound periodicals, constituted the only additions. The issues during the year for perusal stood thus: books, 469; periodicals, 97; newspapers, 537. There had been 13 lectures delivered during the session, 6 scientific, 5 literary, and 2 musical; they stand as under—Rev. S. Robins, M.A., "Books;" J. Brent, Esq., Jun., F.S.A., "Lyrical Poetry;" Mrs. C. L. Balfour, "On Celebrated Women, living at Times of Great Revolutions, in England, America, and France;" Rev. M. Woodward, M.A., "On the Chemistry of Water;" Peter Spencer, Esq., "On the British Poets;" Mr. Lane, F.C.P., "On Crowds;" Herr Schultzes, "On Music;" Mr. Mockett, "On Experimental Chemistry;" Mr. F. Warr, "Astronomy;" Mr. A. Bottle, "Electricity;" Mr. E. Wheeler, "On the Philosophy of Heat;" and Mr. J. R. Mummery, F.L.S., "On Marine Natural History." One conversation had also taken place, "On the Restoration of the Maison Dieu Hall, Dover." The Museum had been enriched in all its departments, and the visitors to it had been constant and very numerous during the year. The report then stated that the committee had received circu-

lars from the Society of Arts, London, respecting the proposed examinations, in different branches of knowledge, of members of the associated institutions, the particulars of which the members have been made acquainted with from the circulars themselves, which had been laid on the reading-room table. The committee regretted no classes had been in operation, with the exception of the French classes. There was a slight increase in the number of members, 40 having been admitted, against 30 who had left the Society: total number, 170. The treasurer presented his report, which showed only a small balance against the Society. The report having been approved and adopted, the election of officers and committee for the ensuing year was proceeded with, when the Mayor of Dover for the time being was elected President of the Institution; Vice-Presidents, Dr. Baird and Mr. Poulter; Curator, Mr. John Friend; Secretaries, Mr. Phillips and Mr. Bottle, in the room of Mr. R. Rees, resigned; Treasurer, Mr. John Mummery; Librarian, Mr. H. Crow; Guardian of Apparatus, Mr. R. Rees. L. Stride, Esq., was elected on the committee, in the room of Dr. Baird, appointed Vice-President; and in room of the six gentlemen of the committee going out by rotation, G. T. Thompson, Esq., J. C. Ottaway, Esq., and — Barton, Esq., were elected, and the Rev. John Briggs, A. Penny, Esq., and J. R. Mummery, Esq., re-elected. Mr. Charles Gordon was re-elected Exhibitor of the Museum, and the proceedings then terminated with a vote of thanks to the chairman, J. Poulter, Esq.

LIVERPOOL.—At the end of May two lectures on the extinct Animals of the Ancient World were delivered, by Waterhouse Hawkins, Esq., at the Collegiate Institution.

## MEETINGS FOR THE ENSUING WEEK.

- MON. Society of Arts, 12, Conference of Representatives of Institutions in Union.  
Geographical, 8½, 1, Mr. W. D. Cooley, "Central Africa."  
2, Dr. Livingston, "The Longitude of the Anango." 3, Capt. Becher, "The Landfall of Columbus." 4, Capt. Spratt, "Route between Kusherjé and the Danube." 5, Mr. Henry Poole, "Journey in Nicomedia and Palestine." 6, Society of Arts, 4½, One Hundred and Second Anniversary Dinner, at the Crystal Palace.
- TUES. Med. and Chirurg., 8½.  
Zoological, 9.
- WED. Society of Arts, 4, Annual General Meeting.  
Microscopical, 8.  
Royal Society of Literature, 8½.
- THURS. Numismatic, 7, Anniversary.
- FRI. Philological, 8.
- SAT. Royal Botanic, 8½.

## PARLIAMENTARY REPORTS.

### SESSIONAL PRINTED PAPERS.

*Delivered on 12th June, 1856.*

- Par. No.  
249. Cheese—Account.  
250. Hereditary Pensions Redemption—Account.  
261. Wine and Spirits—Account.  
262. Vessels and Tonnage, &c.—Return.  
264. Appellate Jurisdiction (House of Lords)—Lords Report.  
170. Bills—Medical Profession (as amended by the Select Committee).  
171. Bills—Annuities Redemption.  
169. Bills—Appellate Jurisdiction (House of Lords).  
Cape of Good Hope (Kaffir Tribes)—Further Papers.  
Public General Acts—Cap. 20, 21, and 22 (Delivered on 11th June).

*Delivered on 13th June, 1856.*

213. Holyrood Park—Correspondence.  
257. Copper, &c.—Account.  
260. Constabulary (Ireland)—Treasury Minutes, &c.  
276. St. James's Park—Estimate.  
277. War with Russia—(Vote of Credit for the late War).  
172. Bills—Stock in Trade Exemption.  
173. Bills—Tithe Commutation Rent-Charge (as amended by the Select Committee).  
Sound Dues—Correspondence.

*Delivered on 14th and 16th June, 1856.*

259. Education—Minutes of the Committee of Council.  
267. East India Pensions—Return.  
269. Forest of Dean Central Railway Advance—Correspondence.  
265. Nawab of Surat Treaty Bill—Minutes of Evidence.

## PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette June 13th, 1856.]

Dated 6th March, 1856.

564. Thomas Tiedall, Reynoldstown-house, Dublin—Improvements in machinery or apparatus for propelling steam vessels.

Dated 8th May, 1856.

1085. Alexander Allott, Park, Nottingham—Improvements in drying apparatus.

Dated 10th May, 1856.

1106. Joshua Binns, Dukinfield—Improvements in machinery or apparatus for winding, sizing, and beaming yarns.

Dated 20th May, 1856.

1188. George Wilkinson, 17, Evans-street, Poplar—Improvements in steering apparatus, and in giving motion to machinery for raising and moving weights.

Dated 22nd May, 1856.

1221. William Churchill Dempsey, 4, Liverpool-street, King's-cross—A compound for removing all obstructions of the air passages.

Dated 24th May, 1856.

1245. Adam Dunin Jundzill, 18, Portugal-street, Lincoln's-inn-fields—Instrument for animating stereoscopic figures.

Dated 26th May, 1856.

1261. Andre Adolphe Gaget, 39, Rue de l'Echiquier, Paris—Improvements in bookbinding.

Dated 27th May, 1856.

1268. Alfred Vincent Newton, 66, Chancery-lane—Improvements in reaping machines. (A communication.)

Dated 28th May, 1856.

1270. Lemuel D. Owen, Southampton-street—Improvements in the manufacture of artificial stone. (A communication.)

1271. John Macdonald, 13, Henry-street, Upper Kennington-lane, Vauxhall—Improvements in the reflection, emission, and radiation of light and heat for lamps, lighthouse apparatus, and other useful purposes.

1272. Joseph Clark, Buckskin Farm, Basingstoke—Improved horse hoe.

1273. William Fulton, Glasgow—Improvements in preparing and spinning fibrous materials, and in machinery or apparatus employed therein.

1274. Charles Herbert Holt, Manchester—Improvements in steam-boilers, furnaces for the same, and apparatus connected therewith.

1275. George Bell and George Charles Grimes, 1, Vauxhall-walk—Improvements in the manufacture of frictional matches and fuzes.

1276. Richard Archibald Brooman, 166, Fleet-street—Improved coating or composition to be applied to substances in order to render them unflammable, and in the method of and apparatus for manufacturing the same. (A communication.)

Dated 30th May, 1856.

1278. Herman John van den Hout, Covent-garden—Improvements in the preparation of pulp for the manufacture of paper, millboard, and other like purposes.

1279. Alexander Drew, Glasgow, and Matthew Gray, Bonhill—Improvements in weaving.

1280. Donald Bethune, Cambridge-terrace, Hyde-park—Improvements in apparatus for dyeing.

1281. William Carr Hutton, Sheffield—Improvements in stamps or hammers worked by power.

1282. John Weems, Johnstone, N.B., and John Henderson McCrindell, Glasgow—Improvements in the manufacture or working of metals and their ores.

1283. Frederick Luke Stott, Rochdale, and Thomas Belward and James Findlow, Manchester—Improvements in machinery or apparatus for washing wool or garments, and other articles made of textile fabrics.

1284. John Harris Heal, 196, Tottenham-court-road—Improvement in hair and wool mattresses.

Dated 31st May, 1856.

1285. Adolphe Bouvallet, 39, Rue de l'Echiquier, Paris—Improvements in printing woven fabrics, velvet, skins, and other like materials.

1286. Francis Alton Calvert, Manchester—Improvements in machinery for opening, cleaning, and carding cotton and other fibrous materials.

1287. Alfred Watson and Alfred Hamlyn Williams, Cornhill—Improvement in bottles, flasks, and other like receptacles for liquids.

1289. Fennell Allman and Donald Bethune, Cambridge-terrace, Hyde-park—Improvements in apparatus for separating fluids from solids, or for separating the more fluid particles from the more solid of various bodies.

1290. Henry Bessemer, 4, Queen-street place, New Cannon-street—Improvements in shaping, pressing, and rolling malleable iron and steel.

1291. Robert Jobson, Wordsley—Improvements in apparatus for making moulds for casting metals.

1292. Henry Bessemer, 4, Queen-street-place, New Cannon-street—Improvements in the manufacture of iron and steel.

1293. William Gossage, Widnes—Improvements in the manufacture of certain kinds of soap.

1294. Daniel Spink, Bridgwater—Improvements in rails and railways.

1295. Capt. Francis Fowke, R.E., Fall-mall—Improved portable photographic camera.

Dated 2nd June, 1856.

1296. Robert Blackwood, senr., Kilmarnock—Improvements in machinery or apparatus for doubling yarns or threads.

1298. Thomas Wilson, Birmingham—Improvements in screw-wrenches.

1300. Stephen Rossin Parkhurst, New York—Improvements in paddle wheels for steamboats and vessels.

1301. Bennett Johns Heywood, Leicester-square—Improved construction of holder for leads and other marking materials.

1302. Louis Auguste Diendoné, 35, Essex-street, Strand—Improvements in nose bags. (A communication.)

1303. Auguste Cadet, 36, College-street North, Camden-town—Improved stamp inking apparatus. (A communication.)

1304. Augustin Marie Herland, Paris—A new regulator pen-holder.

1305. Victor Jean Baptiste Mauban, 39, Rue de l'Echiquier, Paris—Improvements in the manufacture of cans for holding oils and other liquids.

1306. James Edward McConnell, Wolverton—Improvements in locomotive engines.

1308. James Nasmyth, Patricroft, and James Brown, Newport, Monmouth—Improvements in apparatus for the manufacture of tin plates.

1309. Joseph Grolez, Paris—Improved plough.

1310. Edward Marsden, Hanley-wood, Derby—Improvements in implements for pulverizing and cleaning land.

1311. William Beadon, Otterhead, Honiton—Improvements in agricultural implements for cleaning, cultivating, and rolling land.

Dated 3rd June, 1856.

1313. Thomas William Willett, 59, Chancery-lane—Improvements in the manufacture of gunpowder.

1314. George Josiah Mackelcan, Islington—Improvements in the manufacture of rollers adapted to calico and other printing.

1315. Edwin Heywood, Sutton-cross-hills, Leeds, and Thomas Ogden Dixon, Steeton, near Keighley—Improvements in the means of attaching drawer and other knobs or handles.

1316. Christian Rudolph Wessel, 25, Fitzroy-square, New-road, and Francis Xavier Kukla, 3, Raven-row, Mile-end-road—A vapourless glow-heat disseminator.

1317. Joseph Bauzemont, Paris—Improvements in purifying turpentine.

1318. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in oil cans employed in lubricating machinery. (A communication.)

1319. Walter George Whitehead and Frederick Augustus Harwood, Birmingham—Improved candlestick.

1320. Jean Jacques Lebaillif, Falaise, France—Improvements in beating, cleaning, napping, and dressing cotton, wool, flax, tow, and other similar fibrous substances, and stuffs or woollen cloths.

1321. Raymond Fletcher, Derby, and Edwin Fletcher, Monk Bretton, York—Improvements in sweeping chimnies or other flues.

1322. Montague Richard Levenson, 12, St. Helen's-place—Improvements in tackle-blocks. (A communication.)

## WEEKLY LIST OF PATENTS SEALED.

Sealed June 13th, 1856.

2851. William Sangster.

2867. Frederick Robert Augustus Glover, M.A.

2868. Frederick Robert Augustus Glover, M.A.

2800. Myles Kennedy and Thomas Eastwood.

606. Christopher Duckworth and Thomas Marsden.

Sealed June 17th, 1856.

2845. Charles Bracegirdle.

2850. George Gotts Golding.

2862. David Lloyd Price.

2866. Edward Davies and John Milne Syers, and Charles Humfrey.

2878. Andrew Shanks.

2916. John Barton.

2936. Thomas Fielden Uttley.

1. Henry Truelove.

16. George Williams.

40. Francis William Geriah.

99. Adolf Pollak.

100. Edward Hammond Bental.

264. Thomas Burdett Turton and John Root.

512. John Fowler, junr., and David Greig.

584. James Mills.

592. John Fowler, junior.

798. George Gwynne.

830. Arnold Morton.

840. William Edward Newton.

842. Arnold Morton.

850. Alexander Charles Louis Devaux.

854. John Brooke.

860. George Frederick Morrell.

900. George Tomlinson Bousfield.

902. William Fuller.

910. John Henry Johnson.

916. John Henry Johnson.

## PATENTS ON WHICH THE THIRD YEAR'S STAMP DUTY HAS BEEN PAID.

June 10th.

1424. Christopher Nickels and James Hobson.

1442. Joseph Leon Talbot and John Davie Morris Stirling.

June 11th.

1456. John Elliott and John Brown.

June 13th.

1439. Joseph H. Penny and Thomas B. Rogers.

June 14th.

1472. Joseph Warren.

1478. Robert Lister.

1493. James Worrall, junr.

1530. Thomas Weatherburn Dadds.

1726. William Thorp.

June 14th.

1453. James Dilkes and Edward Turner.

1549. John Emanuel Lightfoot.